Triangulating Ordinary Meaning

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Textualism claims to pave a clear path to the determinate "ordinary meaning" of statutory language. But textualist Justices disagree about the ordinary meaning of particular statutes. This Essay proposes a new way forward: triangulating ordinary meaning with multiple empirical methods. Specifically, textualists who seek ordinary meaning should in some circumstances consider the possibility of complementing (1) traditional tools—such as dictionaries, linguistic canons, and intuition—with newly available data from (2) corpus linguistics and (3) survey experiments. As a case study, we consider Pulsifer v. United States, *concerning interpretation of the First Step Act. The Supreme Court will soon decide* Pulsifer, *a decision that likely turns on the Court's conclusion about ordinary meaning. We present original corpus linguistic and experimental survey studies that bear on this issue. The Essay's conclusions have concrete implications for* Pulsifer, *a case which could impact the sentences of thousands of drug defendants. This proof of concept also has broader implications for statutory interpretation theory.*

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INTRODUCTION

The Supreme Court has unified around textualism as its theory of statutory interpretation.[1] Textualists seek to give a statute its "ordinary meaning."[2] This is often portrayed as an empirical question—as to what the text would communicate to an ordinary[3] or reasonable person.[4] And the answer to such a question is frequently defended on the ground that it will yield clear, determinate answers. Despite apparent convergence on the theory,[5] however, textualists have diverged in assessing the ordinary meaning of particular statutes.[6]

This Essay develops a new path forward, which we call *triangulating ordinary meaning*. Taking inspiration from triangulation in the sciences[7] and Larry Solum's foundational work on triangulation in constitutional interpretation,[8] we propose that textualists should consider multiple methods, which can help confirm or question each other. Three of those methods are: (1) traditional tools of statutory interpretation (including

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[1] *See, e.g.*, Victoria Nourse, *The Paradoxes of a Unified Judicial Philosophy: An Empirical Study of the New Supreme Court: 2020–22*, 38 CONST. COMMENT. 1, 3 (forthcoming 2023). *But see id.* at 9 (documenting that modern textualists also appeal to consequences); Anita S. Krishnakumar, *Backdoor Purposivism*, 69 DUKE L.J. 1275, 1282 (2020) (documenting modern textualists' appeal to purpose).

[2] *See* ANTONIN SCALIA & BRYAN A. GARNER, READING LAW: THE INTERPRETATION OF LEGAL TEXTS 69 (2012); BRIAN G. SLOCUM, ORDINARY MEANING: A THEORY OF THE MOST FUNDAMENTAL PRINCIPLE OF LEGAL INTERPRETATION 2 (2015).

[3] Sometimes "ordinary meaning" is used in reference to the understanding of an ordinary person—a member of the general public. Amy Coney Barrett, *Congressional Insiders and Outsiders*, 84 U. CHI. L. REV. 2193, 2194 (2017) ("What matters to the textualist is how the ordinary English speaker—one unacquainted with the peculiarities of the legislative process—would understand the words of a statute."). Alternatively, the term may be used to capture the idea of the ordinary or common understanding of a statutory term in any given speech community (including in the language of law). *E.g.*, SCALIA & GARNER *supra* note 2, at xxv.

[4] John F. Manning, *What Divides Textualists from Purposivists?*, 106 COLUM. L. REV. 70, 76 (2006) (textualists should look to evidence of how a "reasonable person" uses words).

[5] Some have questioned whether textualist *theory* is converging or uniform at the Supreme Court. *See, e.g.*, William Eskridge Jr., Brian Slocum & Kevin Tobia, *Textualism's Defining Moment*, 123 COLUM. L. REV. (forthcoming 2023) (manuscript at 11–12), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4305017# [https://perma.cc/8RRK-P2YQ] (last visited Aug. 21, 2023) (describing twelve choices for modern textualists, which result in different textualist theories); Tara Leigh Grove, Comment, *Which Textualism?*, 134 HARV. L. REV. 265, 267 (2020) (distinguishing "formalistic" and "flexible" textualist theories). Others have emphasized the conflicted *results* following from a (perhaps) unified theory. *E.g.* Nourse, *supra* note 1, at 38.

[6] *See, e.g.*, Bostock v. Clayton Cnty., 140 S. Ct. 1731, 1767 (2020); Atl. Richfield Co. v. Christian, 140 S. Ct. 1335, 1353 (2020); McGirt v. Oklahoma, 140 S. Ct. 2452, 2469, 2494 (2020); HollyFrontier Cheyenne Ref., LLC v. Renewable Fuels Ass'n, 141 S. Ct. 2172, 2177, 2183 (Barrett, J., dissenting) (2021); Van Buren v. United States, 141 S. Ct. 1648, 1654, 1664 (2021); Niz-Chavez v. Garland, 141 S. Ct. 1474, 1480, 1489 (2021); Wooden v. United States, 142 S. Ct. 1063, 1072, 1078 (Barrett, J., concurring) (2022).

[7] *See generally* USING CORPUS METHODS TO TRIANGULATE LINGUISTIC ANALYSIS (Jesse Egbert & Paul Baker eds., 2020) (discussing triangulation in the social sciences and sciences).

[8] Lawrence B. Solum, *Triangulating Public Meaning: Corpus Linguistics, Immersion, and the Constitutional Record*, 2017 BYU L. REV. 1621, 1621 (2017).

dictionaries, linguistic canons, and intuition); (2) newly available data from corpus linguistics;[9] and (3) newly available data from survey experiments.[10]

The suggestion to complement traditional tools with new ones echoes recent discussion at the Court. For example, Justice Alito's concurrence in *Facebook v. Duguid* noted that "The strength and validity of an interpretive canon is an empirical question," and that courts might one day look to "corpus linguistics" to clarify which canons are most useful.[11] In the oral argument in *Duguid*, Chief Justice Roberts asked about surveys of "ordinary" people:

> [O]ur objective is to settle upon the most natural meaning of the statutory language to an ordinary speaker of English, right? . . . So the most probably useful way of settling all these questions would be to take a poll of 100 ordinary -- ordinary speakers of English and ask them what [the statute] means, right?[12]

This Essay employs these two methods to address the linguistic issue in *Pulsifer v. United States*, which the Supreme Court will decide in the 2023 Term.[13] *Pulsifer* concerns the eligibility of drug defendants to receive sentences below the mandatory minimum. Under 18 U.S.C. § 3553(f), defendants convicted of certain drug offenses may obtain "safety valve" relief—sentencing below mandatory minimums—if they satisfy certain requirements. Some of the conditions are stated in § 3553(f)(1). As amended, 18 U.S.C. § 3553(f)(1) reads:

> (f) LIMITATION ON APPLICABILITY OF STATUTORY MINIMUMS IN CERTAIN CASES.—Notwithstanding any other provision of law, in the case of an offense under [21 U.S.C. § 841 or other federal drug laws], the court shall impose a sentence . . . without regard to any statutory minimum sentence, if the court finds at sentencing, after the Government has been afforded the opportunity to make a recommendation, that—
>
>   (1) the defendant does not have–
>
>   (A) more than 4 criminal history points, excluding any criminal history points resulting from a 1-point offense, as determined under the sentencing guidelines;

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[9] *See, e.g.*, Thomas R. Lee & Stephen C. Mouritsen, *Judging Ordinary Meaning*, 127 YALE L.J. 788, 795 (2018).

[10] *E.g.*, Kevin Tobia, Brian G. Slocum & Victoria Nourse, *Statutory Interpretation from the Outside*, 122 COLUM. L. REV. 213, 223 (2022). One of us has raised concerns about the utility of survey data. Lee & Mouritsen, *supra* note 9, at 861. Another has pushed back on the use of corpus evidence. *See* Kevin P. Tobia, *Testing Ordinary Meaning*, 134 HARV. L. REV. 726, 802 (2020). But we have also suggested that the cited shortcomings of each approach may be overcome and perhaps could be addressed by combining corpus evidence with survey data in an appropriate case. *Id*. at 802–06; Lee & Mouritsen, *supra* note 9, at 862. We use *Pulsifer v. United States* as a test case for that proposition—without abandoning the concerns expressed in our prior work and in no way suggesting that corpus or survey analysis will always be appropriate.

[11] *Facebook, Inc. v. Duguid*, 141 S. Ct. 1163, 1174 (2021) (Alito, J., concurring).

[12] Transcript of Oral Argument at 51–52, *Duguid*, 141 S. Ct. 1163 (No. 19-511).

[13] United States v. Pulsifer, 39 F.4th 1018, 1018 (8th Cir. 2022), *cert. granted*, 143 S. Ct. 978 (2023) (No. 22-340).

> (B) a prior 3-point offense, as determined under the sentencing guidelines; and
>
> (C) a prior 2-point violent offense, as determined under the sentencing guidelines;

There are two competing interpretations of "<u>does not have</u> A, B, <u>and</u> C." The first is the disjunctive or "distributive reading," on which "have" distributes across the listed items. On this reading, "does not have A, B, and C" means "does not have A, does not have B, and does not have C." In the context of *Pulsifer*, this is a pro-government reading, under which eligible defendants must not have A, must not have B, and must not have C (or in other words must not have A, B, *or* C).[14]

The second reading is the conjunctive or "joint reading." On this reading, an interpreter should not add an additional "have" into the text. The condition that someone "does not have A, B, and C" is satisfied when that person "does not have" A, B, and C *jointly*.[15] This is the prodefendant reading, under which eligible defendants must not have all three conditions together.

In contexts unlike that of 18 U.S.C. § 3553(f)(1), one can find examples of negated conjunctions that take either reading. Consider examples that have surfaced in the *Pulsifer* briefs and lower court opinions:

1. You must not drink and smoke.[16]
2. You must not drink and drive.[17]

Intuitively, Rule 1 takes a *distributive* reading. Rule 1 prohibits drinking and prohibits smoking. Someone who drank while abstaining from smoking is not complying with this rule. Alternatively, Rule 2 takes a *joint* reading. Rule 2 prohibits the combination of drinking and driving. A sober driver has not violated rule 2; nor has someone who drinks and calls a designated driver.[18] These examples suggest that in some circumstances negated conjunctions express distributive readings and in others they express joint readings. But these examples do not tell us much about what negated conjunctions generally express, or what "does not have A, B, and C" generally means.

The Supreme Court will decide *Pulsifer v. United States* in the 2023 Term. The Court's opinion will resolve a circuit split among the Fourth, Fifth, Sixth, Seventh, Eighth, Ninth, and Eleventh Circuits, affecting thousands of drug defendants each year.[19]

This Essay presents linguistic evidence of relevance to the question presented in *Pulsifer*. Our evidence can be viewed, in the terminology of lexical semantics, from the

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[14] *See, e.g.*, United States v. Palomares, 52 F.4th 640, 647 (5th Cir. 2022); United States v. Haynes, 55 F.4th 1075, 1079 (6th Cir. 2022); United States v. Pace, 48 F.4th 741, 756 (7th Cir. 2022); *Pulsifer*, 39 F.4th at 1022.

[15] *See, e.g.*, United States v. Jones, 60 F.4th 230, 239 (4th Cir. 2023); United States v. Lopez, 998 F.3d 431, 444 (9th Cir. 2021); United States v. Garcon, 54 F.4th 1274, 1276 (11th Cir. 2022) (en banc).

[16] *Garcon*, 54 F.4th at 1280.

[17] *Id.* at 1278.

[18] Similar examples can be constructed with "have," which may be more relevant to *Pulsifer*. Consider "Do not have drugs and alcohol"; and "Do not have medicine and alcohol."

[19] *Justices' Review of 'Safety Valve' Law Could Affect Many Drug Cases*, NAT'L CRIM. JUST. ASS'N (Feb. 27, 2023), https://www.ncja.org/crimeandjusticenews/justices-review-of-safety-valve-law-could-affect-many-drug-cases [https://perma.cc/S78M-P4KM].

perspective of either semasiology or onomasiology.[20] Semasiology is a "text to meaning" inquiry; it starts with words (for example "does not have—(A . . . ; (B) . . . ; and (C) . . . ") and investigates their meaning. Onomasiology works in the other direction—"meaning to text"; it starts with possible meanings (for example joint, distributive) and investigates which words are used to express each meaning.

Both approaches are evidenced in textualist inquiries in the courts (though not by their esoteric names). Judges may start with the statutory text and ask how it would be understood by an "ordinary reader,"[21] or start with hypothesized meaning and ask how that meaning ordinarily would be expressed within a statutory text.[22] Both inquiries raise empirical questions that are better resolved in light of tools used by linguists. And this Essay shows how those tools can pave the way for a more transparent, replicable decision in a case like *Pulsifer*.

Part I outlines contributions from traditional linguistic interpretive tools—including dictionaries and linguistic canons. Part II looks to a new interpretive tool: corpus linguistics. We evaluate naturally occurring ordinary and legal language, identifying patterns in the use of negated conjunctions and disjunctions. In Part III, we discuss extant work from survey experiments in linguistics and present one new study of three hundred Americans, tailored more closely to the language at issue in *Pulsifer*. Part IV develops the Essay's conclusions about *Pulsifer*. Our corpus linguistics- and survey-experiment evidence highlight ambiguity in the negated conjunctive structure of § 3553(f)(1) but also suggest grounds for joint (pro-defense) reading. Part IV also develops the broader implications of the Essay's proof of concept, including the comparative strengths and limitations of corpus linguistics and survey experiments in legal interpretation.

I. TRADITIONAL TOOLS

The circuit split in *Pulsifer* divides along two competing interpretations of "<u>does not have</u> A, B, <u>and</u> C": the (pro-government) disjunctive or "distributive reading," in which "does not have" distributes across the listed items ("does not have A, does not have B, and does not have C"); and the (pro-defense) conjunctive or "joint reading," in which "does not have" applies to the listed items jointly ("does not have" A, B, and C together).

Lower courts have mostly employed four sets of traditional tools of textual interpretation in interpreting § 3553(f)(1): dictionaries, prescriptive rules (of grammar and logic), linguistic canons, and examples of language usage (for example, intuitive hypotheticals). But the first three inquiries result in a standoff between dueling definitions, rules, and canons. And the last is unsatisfying to the extent it relies on examples drawn from judges' intuition as a basis for a purportedly determinate inquiry into textual meaning.

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[20] Dirk Geeraerts, *The Scope of Diachronic Onomasiology*, *in* DAS WORT: SEINE STRUKTURELLE UND KULTURELLE DIMENSION 29–30 (Herausgegeben von Vilmos Ágel et al. eds., 2002) ("[S]emasiology takes its starting-point in the word as a form, and charts the meanings that the word can occur with; onomasiology takes its starting-point in a concept, and investigates by which different expressions the concept can be designated, or named.").

[21] *See* Niz-Chavez v. Garland, 141 S. Ct. 1474, 1480 (2021) (concluding that the use of an indefinite article in the phrase "'a' notice" in 8 U.S.C. § 1229b(d)(1) would suggest to "an ordinary reader" a requirement of "'a' single document containing" the information required by statute).

[22] *Id.* at 1481 (concluding that "*countable* nouns" are ordinarily preceded by indefinite articles, but "*noncountable* nouns . . . almost never take" such articles).

A. DICTIONARIES

Many of the lower court opinions note that *and* is frequently defined in dictionaries as a *conjunctive* connector—"'[a]nd' means 'along with or together with.'"[23] This conjunctive sense of *and* is presented in support of the pro-defense, joint interpretation—the view that "all the requirements" connected by "and" "must be met" together.[24]

Two dictionary-based responses have been advanced in support of a pro-government interpretation: (a) the observation that dictionaries (especially law dictionaries) also attest a disjunctive meaning of *and*—it can sometimes mean *or*;[25] and (b) the assertion that even on the conjunctive meaning, "'*and*' has 'a distributive (or several) sense as well as a joint sense.'"[26]

B. PRESCRIPTIVE RULES

The standoff in dictionary analysis has led courts to turn to prescriptive rules of logic and corresponding canons of interpretation. In support of the joint (pro-defense) view, judges have cited DeMorgan's Law, "a logical precept which holds that (1) the negation of a conjunction is equivalent to the disjunction of the negations, and (2) the negation of a disjunction is equivalent to the conjunction of the negations."[27] And they have traced that principle to the so-called "conjunctive negative proof," under which a standard of eligibility requiring proof "that you have not A, B, and C" is met only upon a showing "that you did not do all three."[28]

Judges on the other side of the split offer a different view. Some suggest that the conjunctive negative proof may be read to require proof that you did not do all three items at any time.[29] Others repudiate these prescriptive principles altogether—asserting that "the

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[23] *See* United States v. Garcon, 54 F.4th 1274, 1278 (11th Cir. 2022) (en banc) (quoting *And*, WEBSTER'S THIRD NEW INT'L DICTIONARY OF THE ENG. LANGUAGE (unabr. 1993)).

[24] *Id.*

[25] *See id.* at 1291 (Jordan, J., dissenting) (citing 1 ALEXANDER M. BURILL [sic], A NEW LAW DICTIONARY AND GLOSSARY: CONTAINING FULL DEFINITIONS OF THE PRINCIPAL TERMS OF THE COMMON AND CIVIL LAW 70 (1850) ("AND, in written instruments, is frequently construed to mean *or*, where reason and the intent of the parties requires it."); *id.* (quoting WEBSTER'S DICTIONARY OF ENGLISH USAGE 94 (1989) ("English courts . . . 'allowed for *and = or* and *or = and*.'")).

[26] United States v. Pulsifer, 39 F.4th 1018, 1021 (8th Cir. 2022) (emphasis added) (first citing GARNER'S DICTIONARY OF LEGAL USAGE 639 (3d ed. 2011); and then citing SCOTT J. BURNHAM, THE CONTRACT DRAFTING GUIDEBOOK 163 (1992)).

[27] *See* United States v. Palomares, 52 F.4th 640, 653 (5th Cir. 2022) (Willett, J., dissenting). As applied to everyday language, this principle would suggest that "Jane did not have breakfast, lunch, and dinner today" means that today, she did not have at least one of breakfast, lunch, or dinner, and that "Jane did not have breakfast, lunch, or dinner today" means that today, Jane did not have breakfast and she did not have lunch and she did not have dinner. As applied to § 3553(f)(1), DeMorgan's Law suggests that a person "does not have A, B, and C" if he does not have at least one of A, B, or C (the pro-defense, joint meaning). It also suggests that "does not have A, B, or C" is the ordinary way to say that a person does not have A, and does not have B, and does not have C.

[28] *See* United States v. Pace, 48 F.4th 741, 762 (7th Cir. 2022) (Wood, J., dissenting) (suggesting that Scalia and Garner leave room for debate on this question but asserting that the debate is resolved elsewhere in *Reading Law*).

[29] *See* United States v. Lopez, 998 F.3d 431, 436 (9th Cir. 2021) (quoting SCALIA AND GARNER, *supra* note 2, at 119–20); *Pace*, 48 F.4th at 768 (Wood, J., dissenting) (disagreeing with this formulation of the

proper interpretation of § 3553(f)(1) does not hinge on an inferential rule of Boolean algebra called 'De Morgan's Theorem.'"[30]

C. LINGUISTIC CANONS

Judges have also invoked competing canons in their interpretation of § 3553(f)(1). The consistent meaning canon has been cited in support of the joint interpretation, while the anti-surplusage canon has been cited as supportive of the distributive approach.

Section 3553(f) provides an "umbrella" clause comprising four numbered requirements connected by an *and*. That *and* is broadly viewed to connect these requirements in a *joint* sense—all of them must be satisfied jointly. And in the view of some judges, that suggests, under the consistent meaning canon, that the *and* connecting the elements of § 3553(f)(1) is also *joint*.[31]

In response, some judges have noted that the consistent meaning rule is a rebuttable presumption and have asserted that it is rebutted here by the anti-surplusage canon. On this view, any defendant who satisfies elements (B) and (C) of § 3553(f)(1) will also have satisfied element (A)—a person with "a prior 3-point offense" (B) and "a prior 2-point offense" (C) will also have "more than 4 criminal history points" (A).[32]

The grounds for invoking each of these canons have also been challenged on their own terms. Some judges have asserted that the *and* in the § 3553(f) umbrella clause can be understood as distributive in the same sense as the distributive *and* in § 3553(f)(1).[33] And others have claimed that subsection (f)(1)(A) may be viewed as independent of elements (B) and (C)—on the view that three-point and two-point offenses under (B) and (C) would not add to the "criminal-history score" under (A) if the offenses are too old to count under the sentencing guidelines, or if "the two- and three-point offenses are treated as a single sentence."[34]

D. INTUITION AND EXAMPLES OF LANGUAGE USAGE

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conjunctive negative proof while observing that Scalia and Garner do not clearly state whether "all three conditions must exist at once (*i.e.*, do they count only if all three are present, and one alone does not suffice) or whether the language must be read in some other way"); *Garcon*, 54 F.4th at 1278 (citing Scalia and Garner for the proposition that "[t]he word 'and' retains its conjunctive sense when a list of requirements follows a negative"—such that a person violates the prohibition "only by doing all three prohibited acts . . . together").

[30] *See Palomares*, 52 F.4th at 649 (Oldham, J., concurring).

[31] *See id.* at 654 (Willett, J., dissenting) (noting that § 3553(f)'s "umbrella clause" is structurally identical to subsection (f)(1); asserting that the umbrella clause must be understood as joint; and citing the consistent-meaning canon in support of a joint understanding of § 3553(f)(1)).

[32] *See* United States v. Pulsifer, 39 F.4th 1018, 1021 (8th Cir. 2022) (asserting that the anti-surplusage canon is "a strong textual basis to prefer a distributive reading of 'and' in § 3553(f)[(1)]"; stating that "[i]f 'and' is read jointly, then subsection (A) is rendered superfluous" because "[a] defendant who has a prior three-point offense under subsection (B) and a prior two point violent offense under subsection (C) would *always* meet the criterion in subsection (A), because he would always have more than four criminal history points.").

[33] *See Palomares*, 52 F.4th at 651 (Oldham, J., concurring).

[34] *See Garcon*, 54 F.4th at 1281–82.

In apparent recognition of the inadequacy of the above tools, judges on both sides of the debate have turned to examples of language usage in context.[35] Judges on the joint sense side have cited sample sentences that seem to align with that understanding: "[d]o not mix heat, fuel, and oxygen," which "instructs the reader to prevent the unity of all three ingredients unless she wants a fire";[36] do not "drink and drive," which implies a prohibition on the joint activity of drinking and driving.[37]

Judges on the distributive sense side cite samples that seem to cut that way: "[t]o enter the stadium, you must not have—(a) a weapon; (b) any food; and (c) any drink," which conveys the idea that each of these items is prohibited individually;[38] and do "not drink and smoke," which suggests that each is separately detrimental to health and individually prohibited.[39]

Judges have used these examples to make implicit and explicit claims about the meaning of negated conjunctions generally. The implicit (semasiological) claim is that the cited examples are representative of the ordinary understanding of a negated conjunction. More explicit claims are also made, such as the (onomasiological) assertion that the more natural or ordinary way to "individually prohibit each item in a list" is to use "or,"[40] or the claim that "and" is "interchangeable with a disjunctive 'or.'"[41]

Some judges have also sought to extend these sorts of claims to the specific language of the United States Code. A few judges have asserted that the language and structure of § 3553(f)(1) are both unusual and clear—in the use of a "does not have" clause followed by an em-dash that connects (in a purportedly clear, distributive way) to a series of nouns set out in separately enumerated elements.[42] Another has suggested "Congress writes statutes like" § 3553(f)(1)—with a distributive use of a negated conjunction—"all the time."[43] And in response, another judge has cited a series of examples in the Code in which negated conjunctions are framed in clearly joint terms.[44]

Textualists have long appealed to intuitive examples. As Justice Scalia noted, "the acid test of whether a word can reasonably bear a particular meaning is whether you could use the word in that sense at a cocktail party without having people look at you funny."[45] Yet, modern textualists acknowledge this approach's substantial limitations. Intuitions are malleable and context-dependent. It is often possible to "cook up" fanciful examples that support either side of an interpretive debate.[46]

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[35] *E.g.*, *Palomares*, 52 F.4th at 644; *id.* at 653 (Willett, J., dissenting).

[36] *E.g.*, *id.* at 653 ("A speaker who wishes to individually prohibit each item in a list must use 'or.'").

[37] *E.g.*, *id.*

[38] *E.g.*, *id.* at 644 (Jolly, J., opinion).

[39] *Garcon*, 54 F.4th at 1280.

[40] *E.g.*, *Palomares*, 52 F.4th at 653 (Willett, J., dissenting); *see also Garcon*, 54 F.4th at 1280 (asserting, in reference to the "drink and smoke" example, that "a reasonable reader might assume that the 'and' was inserted inartfully in place of the more natural 'or'").

[41] United States v. Pace, 48 F.4th 741, 756 (7th Cir. 2022) (Kirsch, J., concurring).

[42] *E.g.*, *Palomares*, 52 F.4th at 642; *Garcon*, 54 F.4th at 1300 n.5 (Branch, J., dissenting).

[43] *Pace*, 48 F.4th at 756 (Kirsch, J., concurring).

[44] *Id.* at 767 (Wood, J., dissenting).

[45] Johnson v. United States, 529 U.S. 694, 718 (2000) (Scalia, J., dissenting).

[46] See Dubin v. United States, 143 S. Ct. 1557, 1576 (2023) (Gorsuch, J., concurring) ("Really, you could spend a whole day cooking up scenarios—ranging from the mundane to the fanciful—that collapse even your most basic intuitions about what §1028A(a)(1) does and does not criminalize.").

Moreover, intuitions vary across different interpreters.[47] This variability might not be obvious to an individual interpreter; empiricists have found that people are subject to "false consensus bias" in legal interpretation, overestimating how often others agree with their personal interpretation.[48]

These features limit the appeal of intuitive examples in legal interpretation. Justice Gorsuch has recently remarked that heavy reliance on intuitive examples is particularly inappropriate in criminal contexts: "Criminal statutes are not games to be played in the car on a cross-country road trip. To satisfy the constitutional minimum of due process, they must at least provide 'ordinary people' with 'fair notice of the conduct [they] punis[h].'"[49] At the least, there should be a more principled approach to selecting intuitive *test cases* (not simply examples supporting one side) and an acknowledgement that there could be variation in how ordinary people evaluate those examples (for example, one judge's intuition about a test case is not necessarily representative of all ordinary peoples').

<p style="text-align:center">* * *</p>

The debate on the ordinary meaning of the negated conjunction in § 3553(f)(1) is at a standstill. Both sides have marshaled dueling dictionary definitions, prescriptive rules, and linguistic canons. And both sides have identified purportedly analogous sentences using negated conjunctions in either the joint or the distributive sense.

Perhaps that could lead a textualist judge to declare an ambiguity—and to turn to an external, substantive rule of decision such as the rule of lenity. But such a rule comes into play only in the face of grave ambiguity. And the textualist inquiry should not end with dueling dictionary definitions and prescriptive rules or cherry-picked sample sentences.

The ordinary meaning inquiry is an empirical one, and it calls for evidence of actual language usage and understanding.

II. CORPUS LINGUISTIC STUDY

Traditional tools fall short of the goal of identifying a determinate answer to the linguistic question presented in *Pulsifer*. Dictionaries and grammar rules point in opposite directions. Examples of language usage seem capable of resolving the tension, but the examples cited in the case law are inadequate for a range of reasons. They are cherry-picked, not the product of a systematic review of naturally occurring language; they are drawn from a mix of legal and non-legal language, without always acknowledging that the difference in register might matter; and at least some of them lack some key elements of the linguistic structure of § 3553(f)(1).

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[47] See *id.* ("Try making up some of your own and running them by a friend or family member. You may be surprised at how sharply instincts diverge."); *see also* Tobia, *supra* note 10, at 743–44 (reporting intuitive disagreement among lay people, law students, and judges about interpretation).

[48] Lawrence Solan, Terri Rosenblatt & Daniel Osherson, *False Consensus Bias in Contract Interpretation*, 108 COLUM. L. REV. 1268, 1269 (2008); Brandon Waldon, Madigan Brodsky, Megan Ma & Judith Degen, *Predicting Consensus in Legal Document Interpretation,* 45 PROC. OF THE ANN. MEETING OF THE COGNITIVE SCI. SOC'Y (2023), https://alpslab.stanford.edu/papers/2023WaldonEtAl.pdf [https://perma.cc/UQF5-3BJW] (last visited Aug. 21, 2023).

[49] *Dubin*, 143 S. Ct. at 1576 (Gorsuch, J., concurring) (alteration in original) (quoting Johnson v. United States, 576 U.S. 591, 595 (2015)).

Some of these challenges arise from the issue presented in *Pulsifer*: this is a hard case of interpretation, which makes it difficult to determine an answer. But some of these challenges are broader, stemming from limitations of the traditional tools. Textualist interpretation should not license *judicial cherry-picking* among dueling dictionaries, dueling linguistic canons, or dueling language hypotheticals. And insofar as textualism is committed to the ordinary speaker of English and ordinary language, it should look to evidence of *natural language use* and comprehension—not only judicially created language hypotheticals. Finally, interpretation in service of values such as fair notice should be more *transparent and reproducible*. When a judge cites a creative hypothetical we do not normally know what other hypothetical that judge has considered, including ones that might support the opposite conclusion. Corpus linguistics can address these shortcomings.

A. BACKGROUND

A "corpus" is a large collection of natural texts, and "corpus linguistics" is the study of language in a corpus (plural "corpora").[50] For decades, corpus linguistics has contributed to a wide range of linguistic questions outside of the law.[51] In recent years, scholars have developed corpus linguistic methods to address questions of legal interpretation.[52] In the past five years, courts have increasingly cited corpus linguistics.[53] And recently, Justices at the Supreme Court have cited corpora[54] and appealed to corpus linguistics.[55]

Within the realm of legal interpretation, corpus linguistics has most often been used to address questions related to semantics, or the meaning(s) of words.[56] But corpus linguistics has long been used to answer linguistic questions related to grammar and lexico-grammar (the interface between words and grammar).[57]

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[50] *See* JESSE EGBERT, DOUGLAS BIBER & BETHANY GRAY, DESIGNING AND EVALUATING LANGUAGE CORPORA: A PRACTICAL FRAMEWORK FOR CORPUS REPRESENTATIVENESS 2, 6 (2022).

[51] *See, e.g.*, Stefan Th. Gries, *What Is Corpus Linguistics?*, 3 LANGUAGE & LINGUISTICS COMPASS 1225, 1229 (2009).

[52] *See, e.g.*, Stephen C. Mouritsen, *The Dictionary Is Not a Fortress: Definitional Fallacies and a Corpus-Based Approach to Plain Meaning*, 2010 BYU L. REV. 1915, 1918 (2010); Lee & Mouritsen *supra* note 9, at 788; Thomas R. Lee & Stephen C. Mouritsen, *The Corpus and the Critics*, 88 U. CHI. L. REV. 275, 275 (2021); *see also* Kevin Tobia, *The Corpus and the Courts*, U. CHI. L. REV. ONLINE (Mar. 5, 2021), https://lawreviewblog.uchicago.edu/2021/03/05/tobia-corpus/ [https://perma.cc/7E3L-RFGF] (summarizing criticisms of these developments and summarizing courts' use of corpus linguistics).

[53] Tobia, *supra* note 52.

[54] *See* Carpenter v. United States, 138 S. Ct. 2206, 2238 n.4 (2018) (Thomas, J., dissenting).

[55] N.Y. State Rifle & Pistol Ass'n v. Bruen, 142 S. Ct. 2111, 2178 (Breyer, J., dissenting) (citing corpus linguistic analysis of the Second Amendment); Facebook, Inc. v. Duguid, 141 S. Ct. 1163, 1174 (2021) (Alito, J., concurring) (stating that "[t]he strength and validity of an interpretive canon is an empirical question" that may "someday" be evaluated "by conducting what is called a corpus linguistics analysis, that is, an analysis of how particular combinations of words are used in a vast database of English prose") (citing Lee & Mouritsen, *supra* note 9).

[56] *See, e.g.*, Lee & Mouritsen *supra* note 9, at 813; Clark D. Cunningham & Jesse Egbert, *Using Empirical Data to Investigate the Original Meaning of 'Emolument' in the Constitution*, 36 GA. STATE U. L. REV. 465, 467 (2020); Tammy Gales & Lawrence M. Solan, *Revisiting a Classic Problem in Statutory Interpretation: Is a Minister a Laborer?*, 36 GA. STATE U. L. REV. 491, 492 (2020).

[57] *See, e.g.*, DOUGLAS BIBER, STIG JOHANSSON, GEOFFREY N. LEECH, SUSAN CONRAD & EDWARD FINEGAN, GRAMMAR OF SPOKEN AND WRITTEN ENGLISH 13 (2021).

The questions in *Pulsifer* are both semantic questions (whether *and* is used in a joint or disjunctive sense) and grammatical (the function of a negated verb when it precedes a coordinated list of nouns). Corpus linguistic tools can help provide evidence of relevance to both types of questions.

Such evidence is best understood in light of some nuances in linguistic theory. One such nuance is the distinction between text-internal and text-external indicators of meaning. Text-internal devices are those appearing on the surface in a given text—in the use of words and phrases, or in context provided by surrounding words or syntax. And text-external devices are those appearing outside the text—in inferences about presumed purpose or "pragmatic enrichment."[58]

The meaning of a simple coordinator such as *and* or *or* could be clarified by the use of a text-internal device such as a modifier. If a negated verb phrase (that is, a phrase beginning with "does not have") includes a modifier such as *both, all of the following,* or *in the aggregate* then *and* is clearly being used in the *joint* sense (for example, "does not have both cats and dogs"). And if the modifier is something such as *either* or *any of the following* then *and* is being used in the *distributive* sense (for example, does not have any of the following: cats and dogs).

Text-external devices could also clarify the meaning of a negated conjunction. A reader or listener might understand a given negated conjunctive list as either jointly or distributively prohibited based on background cultural norms or inferences about the intent of the writer or speaker. The point can be illustrated through two sample sentences cited in the lower court opinions on the question in *Pulsifer*: "Do not drink and drive," and "Do not drink and smoke." The prohibition in the first sentence would likely be understood as joint (the prohibition is only on drinking and driving together) while that in the second would likely be understood as distributive (drinking and smoking are severally prohibited).[59] But there is no text-internal difference between the two sentences. Instead, these differences come from background norms.

B. CORPUS LINGUISTIC ANALYSIS

Courts addressing the question in *Pulsifer* have claimed to find textual grounds for deciding whether the negated conjunction in § 3553(f)(1) is joint or distributive. These claims have been rooted in examples of negated conjunctions in hypothetical statements and in other statutes in the U.S. Code. These examples are presented in support of implicit and explicit claims about the meaning of *and* in a negated conjunction construction—claims that the cited examples are representative of the ordinary understanding of a negated conjunction, that the more natural or ordinary way to "individually prohibit each item in a list" is to use a negated disjunction ("does not A, B, or C")[60] and that *and* is interchangeable with a disjunctive *or*.[61]

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[58] *See* Victoria Nourse, *Picking and Choosing Text: Lessons for Statutory Interpretation from the Philosophy of Language*, 69 FLA. L. REV. 1409, 1415 (2017).

[59] *See* United States v. Garcon, 54 F.4th 1274, 1278, 1280 (11th Cir. 2022) (en banc); *see also Duguid*, 141 S. Ct. at 1174 (Alito, J., concurring).

[60] *See* United States v. Palomares, 52 F.4th 640, 653 (5th Cir. 2022) (Willett, J., dissenting); *see also Garcon*, 54 F.4th at 1280–81 (asserting that "a reasonable reader" confronted with language such as "don't drink and smoke" "might assume that the 'and' was inserted inartfully in place of the more natural 'or'").

[61] *See* United States v. Pace, 48 F.4th 741, 756–57 (7th Cir. 2022) (Kirsch, J., concurring).

These questions should not be resolved by intuition alone—a battle among whatever intuitive examples happen to surface in hypotheticals. They should be informed by empirical evidence based on patterns of natural language use.

Some of the disagreement about the salience of the cited examples seems to stem from differing views on text-external evidence. On the disagreement over negated conjunctions from the Code, for example, much of the difference appears to come down to whether negated elements are understood as "cumulative" or "independent" from a policy perspective.[62] That may also extend to some of the hypothetical statements. On the "do not drink and smoke" example, the distributive interpretation may have "'little to do with syntax and everything to do with our common understanding that' drinking and smoking can be harmful individually."[63]

We set such external considerations aside for purposes of our analysis, focusing instead on identifying empirical evidence based on text-internal devices. We can assess claims about whether *and* is a more natural or ordinary way to express a distributive prohibition than *or*. We can also measure whether and to what extent the structure of § 3553(f)(1) is represented in the U.S. Code, and, when it appears, whether there are text-internal indicators of a joint or distributive sense.

We do not doubt that text-external factors may affect the understanding of a negated conjunction in a particular context. Our analysis sets those considerations aside, however, for two reasons: they are more subjective than the text-internal factors we are addressing and they are, by definition, extra-textual, while our focus here is on the textualist inquiry that the *Pulsifer* courts have claimed to pursue.

We present corpus linguistic evidence of relevance to two sets of questions addressed in the *Pulsifer* line of cases: (1) in negated conjunctions in the U.S. Code, are there text-internal indicators of *joint* or *distributive* meaning?; and (2) is *and* a more ordinary way to express a distributive prohibition than *or* (or are the two connectors interchangeable)? The first question is a matter of semasiology—of the ordinary meaning of the statutory text. The second question goes to onomasiology—of what text is ordinarily used to express distributive (or joint) meaning.

1. Where *And* Is Used as a Negated Coordinator in the U.S. Code, Do Text-Internal Indicators Indicate a Joint or Distributive Meaning?

As a first step in our corpus analysis, we pursued an approach employed in a number of recent cases using corpus tools to inform ambiguities in statutory interpretation. We sought to identify relevant concordance lines using the operative statutory language in relevant corpora, and then attempted to code those lines to see if we could find useful patterns in how that language is used.

We focused here on the context and register of § 3553(f)(1)—with a search for all instances of a negated verb, followed by an em-dash or semicolon, followed by a numbered

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[62] *Id*. at 756.
[63] *Garcon*, 54 F.4th at 1280.

or lettered list of nouns or noun phrases, coordinated by *and,* within a corpus of the U.S. Code.[64]

To study the language of the U.S. Code, we downloaded the full text of the Code for the year 2021[65] and stored the full text of each title in a separate plain text file. This corpus contains 50,110,611 words.

We wrote a Python script that we used to identify every statute in the U.S. Code employing the negated conjunction structure of § 3553(f)(1). We manually reviewed each of the resulting concordance lines to eliminate any results that did not match the targeted structure.

We identified 125 instances of the target structure. We sought to "code" each of these lines—using a standard aimed at identifying whether each of the statutes we found used the negated conjunction in a joint sense, in a distributive sense, or in a sense that could not be determined based on the context available.

Our coding standard focused on text-internal indicators of meaning—words, phrases, or sentences appearing before or after the negated conjunction. These included correlative coordinators (*both, either*), modifiers (*any of the following, in the aggregate*), or any other additional language that clearly indicated that the operative sense of *and* is distributive or joint.

The decision to focus on only the structures with text-internal indicators left us with only 2 of the 125 concordance lines that could be coded as *joint* or *distributive*. One of those was coded as *joint*, the other as *distributive*.

The joint use appeared in 16 U.S.C. § 3839aa–2(i)(3). This provision establishes an upper limit for the amount of "Payments under this subsection to a person or legal entity." Because this statute states that the maximum amount must not exceed the combination of two values "in the aggregate," text-internal factors make clear that the joint sense is the operative one.

The distributive use appeared in 15 U.S.C. § 1673(b)(2). This statute states a prohibition that establishes the maximum percent of a person's disposable income that can be garnished. The first item states that the limit is 50 per centum "where such individual is supporting his spouse or dependent." The second item states that the limit is 60 per centum "where such individual is not supporting such a spouse or dependent." These two scenarios are mutually exclusive—an individual cannot both be supporting and not supporting a spouse or dependent. So the text itself leaves only one possible interpretation of *and*—it is clearly distributive.

These two examples show that Congress is capable of providing clear text-internal indicators of either distributive or joint meaning. They also undermine at least one of the claims made about a text-based basis for distributive meaning—the use of an em-dash. Several courts have latched onto the em-dash as a basis for distributing the "does not have" clause across each of the items listed in § 3553(f)(1).[66] We know of no linguistic basis for that assertion, and none was provided by the judges who made this claim. But we can say that the claim is contradicted by one negated conjunctive list in the U.S. Code that includes

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[64] Our focus was prompted by two sets of assertions in lower court opinions: that negated conjunctions take on a specialized meaning within the Code, and that the specific structure of § 3553(f)(1) is "not common." *Palomares*, 52 F.4th at 644; *see also Pace*, 48 F.4th at 757.

[65] *See 2021 US Code*, JUSTIA, https://law.justia.com/codes/us/2021/ [https://perma.cc/3N4F-HPAH] (last visited Aug. 22, 2023).

[66] *E.g.*, *Palomares*, 52 F.4th at 642; United States v. Jones, 60 F.4th 230, 235 (4th Cir. 2023).

a clear text-internal basis for disambiguation—16 U.S.C. § 3839aa–2(i)(3), which lists a *joint* series following an em-dash.

2. Is *And* a More Ordinary Way to Express a Distributive Prohibition than *Or* (or Are the Two Coordinators Interchangeable)?

Our first research question adopted a semasiological ("text to meaning") perspective. This second research question is onomasiological ("meaning to text"); it focuses on which coordinator (and, or) is preferred by language users when they express a distributive sense or joint sense with the use of a negated coordinator.

To assess this question, we identify sentences with negated coordinators that clearly express a joint or distributive meaning; use a corpus to calculate the frequency of each coordinator (and, or); and compare the proportion of sentences coordinated by each coordinator.

We apply these methods in two different studies. The first study focuses on the statutory register and asks which coordinator (*and*, *or*, *nor*) is preferred within correlative coordinators (containing *both*, *either*, or *neither*). The second study focuses on registers of ordinary language use (news) and asks which coordinator is preferred when the operative sense is distributive or joint.

a. U.S. Code: Text-Internal Indicators

One way to engage the "meaning to text" inquiry is by reference to surrounding terms that clearly express a joint or distributive meaning. We focus here on "correlative coordinators" following negated verbs. Correlative coordinators have two parts: (1) *both*, *either*, or *neither* before a coordinated list, and (2) a syntactically obligatory simple coordinator (*and*, *or*, *nor*).[67] In standard American English, *both* typically corresponds to *and*, signifying a joint interpretation. *Either* and *neither* typically correspond to *or* and *nor*, respectively, signifying a disjunctive or distributive interpretation.[68]

If "and" and "or" are interchangeable, we should expect to find these connectors equally distributed in their association with words such as "either," "neither," and "both." But that is not the case.

We searched the U.S. Code corpus for the use of any of these modifiers (either, neither, both) followed by a negated, coordinated list of two or more noun phrases. Our search revealed 164 hits. And every single one of them is consistent with a joint use of "and" and a distributive use of "or"—"both" always paired with "and" and "either" and "neither" always paired with "or" (or "nor").[69]

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[67] *See* BIBER ET AL., *supra* note 57, at 81–82.

[68] *Id.* at 82.

[69] *See, e.g.*, 15 U.S.C. § 1264(c)(2)(B) ("either" in conjunction with "or"); 7 U.S.C. § 9012(a)(3)(E) ("both" paired with "and").

	AND	OR/NOR	TOTAL
both	6	0	6
either	0	27	27
neither	0	131	131

Table 1. Raw counts for combinations of correlative coordinators (both, either, neither) and simple coordinators (and, or, nor) in the U.S. Code corpus.

b. General Corpora: Text-External Indicators

Another approach to the "meaning to text" analysis is through examples where the joint or distributive meaning is well-accepted. "Don't drink and drive" is clearly understood as joint, at least in the context of safely operating a motor vehicle. And "don't drink and smoke" is clearly understood as distributive, at least in the context of an admonition about good health. But are "don't drink and drive" and "don't drink and smoke" the ordinary way of expressing joint or distributive meaning? Or do they just suggest that these are "possible" ways to express such meanings?

We investigated these questions using the American English portion of the NOW Corpus—a corpus that contains more than a billion words from articles published in U.S. newspapers since 2010.[70] The upside of such a large corpus is that it can often enable us to find examples of words and constructions that are uncommon in other corpora.

We searched for *not* and *don't* preceding "drink and drive," "drink or drive," "drink and smoke," and "drink or smoke," and each of these verbs in either order. We found overwhelming evidence to support the conclusions that "and" is the coordinator ordinarily used to express joint meaning ("don't drink and drive") while "or" is the coordinator ordinarily used to convey distributive meaning ("don't drink or smoke"):
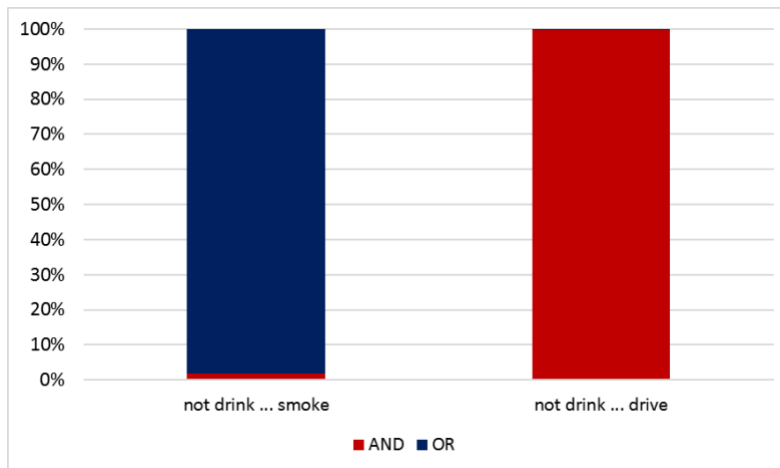

Figure 1. NOW results for "not drink … smoke" and "not drink … drive".

Specifically, we found 299 instances of "not drink and drive," only 1 instance of "not drink or drive," 2 instances of "not drink and smoke," and 107 instances of "not drink or smoke." Assuming that drinking and smoking are prohibited separately and drinking and

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[70] NOW is updated daily. The version of the corpus we used on 4 May 2023 contained 1,046,616,483 words. NOW CORPUS (NEWS ON THE WEB), https://www.english-corpora.org/now/ [https://perma.cc/XV6B-B9YC] (last visited Aug. 22, 2023).

driving are prohibited together, this evidence suggests that using a negated conjunction ("not . . . and") to express a distributive meaning is unusual and perhaps even unnatural. And it confirms that a negated disjunction ("not . . . or") is the more ordinary way to express the distributive sense.

The above sample sentences involve a coordinator connecting verbs, but in § 3553(f)(1), the coordinator connects nouns that are the objects of a transitive verb. We investigated whether that difference mattered by analyzing two sentences that followed the linguistic form of the statute:

> (1) Not tolerate racism . . . discrimination;
>
> (2) Not prove cause . . . effect.

Again we were controlling for accepted meaning—in the understanding that racism and discrimination are individually problematic, while cause and effect are shown jointly. And again we showed that a negated conjunction ("not … and") is an unnatural way to express distributive meaning and a negated disjunction ("not … or") is the more ordinary way to express that sense.

The phrase "not prove cause . . . effect" occurs 127 times, all of which use "and" to convey the joint sense. The phrase "not tolerate racism . . . discrimination" occurs 27 times, and all but one of them use the coordinator "or" rather than "and."
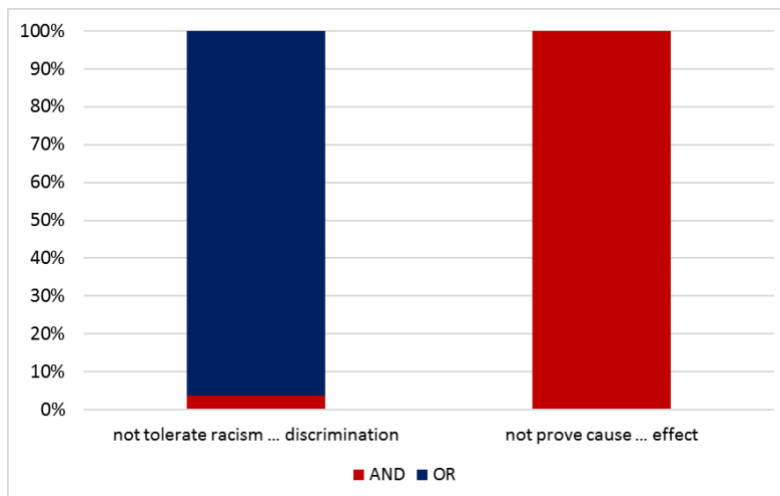

Figure 2. NOW results for "not tolerate racism … discrimination" and "not prove cause … effect"

C. DISCUSSION

We can draw the following two conclusions from the corpus linguistic analyses presented above.

1. Where *And* Is Used as a Negated Coordinator in the U.S. Code, Do Text-Internal Indicators Indicate a Joint or Distributive Meaning?

It is not uncommon for *and* to be used as a negated coordinator in the U.S. Code. At least sometimes, text-internal indicators can clarify either a joint or distributive meaning.

But such meaning is rarely evident on the face of the statutory text, at least in provisions parallel to § 3553(f)(1).

2. Is *And* a More Ordinary Way to Express a Distributive Prohibition than *Or* (or Are the Two Coordinators Interchangeable)?

And and *or* are not interchangeable in negated conjunctive lists. When language users express the joint sense through a negated coordinator, *and* is far more frequent than *or.* The opposite is true when the operative sense is distributive—*or* is far more frequent than *and.* This is clear from corpus analysis of the use of correlative coordinators in the U.S. Code and from corpus analysis of exemplary language where the joint or distributive meaning is well-accepted.

III. SURVEY–EXPERIMENTAL STUDY

Recently, scholars have begun using surveys of ordinary people to make progress in legal interpretation.[71] In oral argument, Justices have begun asking about the value of surveying ordinary people.[72] Of course, judges shouldn't read "ordinary meaning" directly from a survey, and we are not suggesting that judges perform surveys on their own. But we think that a properly controlled survey can provide evidence of relevance to a key question asked by textualists. If textualism promises to adhere to what a statute communicates to the ordinary reader, aren't surveys of ordinary people a useful complement to judicial intuitions about what ordinary people think?

A. EXISTING WORK

Concerning the issue in *Pulsifer*, there is relevant extant linguistics research. Linguists Anna Szabolcsi and Bill Haddican report that, "[a]t first blush, . . . English disjunction and conjunction . . . dutifully obey the de Morgan laws."[73] However, they note, "the 'neither' [distributive] reading is also available in English."[74]

Recent experimental research has attempted to uncover people's default understanding of negated conjunctions. In 2023, Jasbi et al. presented 149 English-speaking experimental participants with a study of various sentences, some of which were negated conjunctions.[75] Their study appears to have been conducted independently of any aim to test the issue in § 3553(f)(1), but in a fortunate coincidence, it examines the verb "have," the same verb at issue in § 3553(f)(1).

For example, one simple negative conjunction prompt was "which doesn't have a cat and dog?" Participants were presented with these questions and choose from among six cards, which depicted: (1) a cat and a dog; (2) a dog and an elephant; (3) an elephant and a

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[71] *See, e.g.*, Kevin Tobia, *Experimental Jurisprudence*, 89 U. CHI. L. REV. 735, 747 n.72, 788, 791 (2022); *see also* James A. Macleod, *Finding Original Public Meaning*, 56 GA. L. REV. 1, 9 (2021).

[72] Transcript of Oral Argument at 52, Facebook, Inc. v. Duguid, 141 S. Ct 1163 (2020) (No. 19-511).

[73] Anna Szabolcsi & Bill Haddican, *Conjunction Meets Negation: A Study in Cross-Linguistic Variation*, 21 J. SEMANTICS 219, 220 (2004).

[74] *Id.*

[75] Masoud Jasbi, Natlia Bermudez & Kathryn Davidson, *Default Biases in the Interpretation of English Negation, Conjunction, and Disjunction*, 2 PROC. ELM 129, 129, 133 (2023).

cat; (4) a cat; (5) a dog; (6) an elephant. Across different question types, participants' negated conjunction responses fell between the joint and distributive interpretations. Over 50% adopted the former interpretation (selecting only cards 2, 3, 4, 5, 6), but a substantial group adopted the latter (selecting only card 6). Jasbi et al. conclude that people are divided among the joint and distributive interpretations.

B. A NEW EXPERIMENT

We sought to build on the Jasbi et al. study, with the aim of speaking even more directly to the linguistic structure in § 3553(f)(1). Jasbi et al. examined two-item lists ("Does not have a cat and dog"), but *Pulsifer* involves a three-item list: Does not have A, B, and C. Our new study modifies the Jasbi et al. study's paradigm to assess people's understanding of negated conjunctions for lists with three items.

1. Design and Materials

The study materials, procedures, participant exclusions, and planned comparisons were pre-registered at Open Science.[76] We used the same card paradigm as Jasbi et al., in which participants are presented with a series of (randomly presented) cards. Jasbi et al. used cards depicting a cat, a dog, and an elephant. We used the same animals, adding a fourth (turtle).[77] For example, a negated conjunction task ("does not have . . . and . . .") would appear to the participants like this:

Consider the following cards. Select every card that meets the following condition:

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[76] All data is available at Open Science. *See* Kevin Tobia, *Ordinary Understanding of Negated Conjunctions*, OSF HOME (July 11, 2023, 7:15 AM), https://osf.io/u3yp7/ [https://perma.cc/XK45-CNPR].

[77] We made one other design change. Jasbi et al.'s questions asked participants to "select a card." Jasbi et al., *supra* note 75, at 134. However, there is a potential ambiguity in questions using the phrase "select *a* card," which could be interpreted to mean pick *any one* card. For example, participants could understand "Select a card if it does not have a cat and dog" to mean pick one card that meets this condition—but not necessarily every card that meets the condition. To avoid this issue, we used a different question: "Consider the following cards. Select every card that meets the following condition: This card does not have a cat, dog, and elephant."

This card does not have a cat, dog, and elephant.

Figure 3. Randomly displayed items in the animal task.

For a negated conjunction question, the "joint" account predicts selection of every card except the card with all four animals and the card with the cat, dog, and elephant (thirteen cards). The "distributive" account predicts selection of only the card with (only) the turtle (one card). There are many other possible combinations of cards.[78] Thus, if participants cluster around one or both patterns predicted by the joint and distributive accounts, it is unlikely that those results emerge from random or entirely unthoughtful responding.

The study design, which is illustrated in Figure 4, was a factorial: 2 (Content: animals, cutlery) * 2 (Article: additional articles, no additional articles) * 4 (Question Type: neither nor, not or, not and, all three). Participants were randomly assigned to one Content, Article, and Question Type.

The Content type manipulation varied the type of list items. To minimize researcher degrees of freedom, we relied on Jasbi et al.'s animal paradigm for one content type. For the other content type, we were interested to explore whether participants' understanding might be influenced by whether the items have a special significance together.[79] We chose to use items of cutlery: a knife, fork, and plate. The final item was one that clearly did not

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[78] There are 32,766 other possible combinations of cards (2^{15}, minus the two patterns predicted by the joint and distributive accounts).

[79] This is one hypothesis underlying the lower courts' discussion of "drink and drive" and "drink and smoke" examples. Some suggest that the joint interpretation is more appropriate for the former because those items have a special significance together.

have this significance with the other items: shoes. The Article manipulation sought to examine whether the presence of additional articles affected understanding.

The Question Type manipulation was the primary manipulation of interest. Participants examining the cards (animals or cutlery) answered one of four different question types. Two were "control conditions," which we anticipated would lead to robust patterns of distributive and joint responding. The distributive control used *neither*. In Jasbi et al., which studied two-item lists, the joint control used *both*: This card does not have both a cat and dog.[80] This expression is not possible with three item lists, so our joint control used "all three:" This card does not have all three of a cat, dog, and elephant. The other two Question Types were test cases. One is the "Not And" phrasing at issue in *Pulsifer*: This card does not have a cat, dog, and elephant. The other is the "Not Or" phrasing: This card does not have a cat, dog, or elephant."

Once a participant was randomly assigned to one Content, Article, and Question Type, we measured their *choice* in a card selection task. For example, a participant in the animal condition would be counted as expressing the "distributive pattern" if they chose only the card with the turtle; they would be counted as expressing the "joint pattern" if they chose all cards except the one with four animals and the one with the cat, dog, and elephant; and they would be counted as expressing "other" if they chose any other combination of cards. See Figure 5.

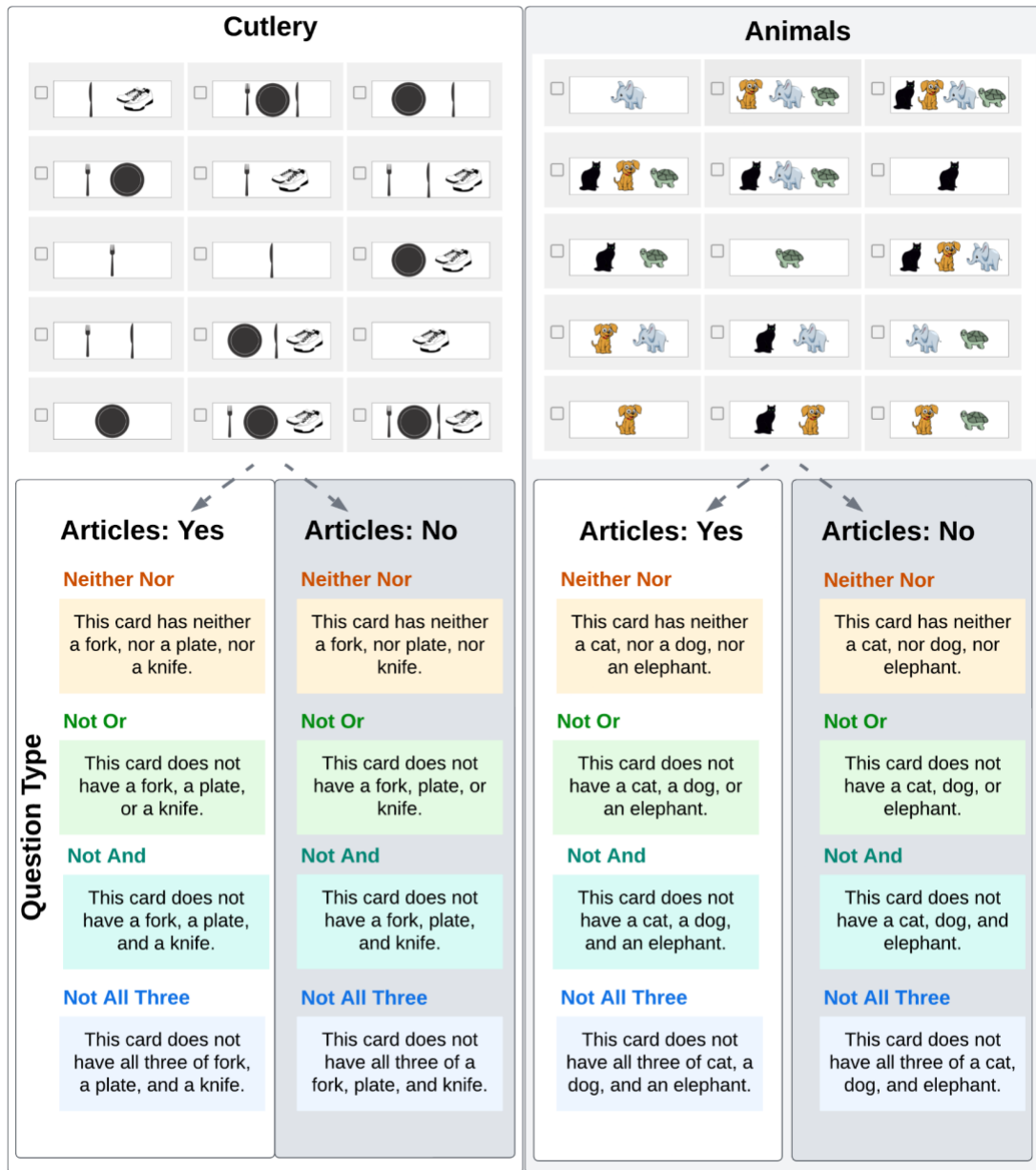
[80] *See* Jasbi et al., *supra* note 75, at 133–34.

Figure 4. Study Design. Participants were randomly assigned to consider one Content (cutlery or animals), in one Article condition (yes, additional articles; or no, no additional articles), and one Question Type (neither nor, not or, not and, or not all three). Each participant saw only one of sixteen possible questions.

After entering their own card choice, participants saw a screen that asked them to imagine that other people answered the same question. Participants were asked to rate how unreasonable or reasonable these other people's responses were. All questions displayed a 1–7 scale, with 1 = unreasonable, 7 = reasonable. The three patterns were displayed in a random order, and each reflected a distributive, joint, or arbitrary pattern.

Figure 5. (a) Reasonableness task introduction for the "Not And" (animal content, no additional articles) condition; (b) the joint pattern figure and question; (c) the distributive pattern figure and question; (d) the "arbitrary" pattern figure and question.

2. Participants and Procedure

We recruited 500 participants from Prolific.co (eligibility criteria: resident of the United States and an acceptance rate of at least 99% on previous surveys on the platform). After random assignment to one Content (animal, cutlery), participants received one

attention check question and two comprehension check questions. First was a comprehension question related to the content type (select all cards displaying an animal/object), ensuring that participants understood that they may select multiple cards. Second was a simple attention check, which required participants to choose the color purple from a list. Third was a comprehension question related to the content type (select the card displaying only an elephant/a knife), ensuring that participants understood that they may select only one card.

Afterwards, participants received their test case (for example, the "Not And" question about animals). Next, participants evaluated the reasonableness of different patterns of responses to the test case question that they just received.

After the main tasks, participants received one more comprehension check question: "Alex is taller than Sam, and Sam is taller than John. Who is the shortest?" (Answer: John). Then participants completed demographic information, completed a CAPTCHA, and submitted the survey.

To submit a survey, participants must have successfully completed the CAPTCHA and indicated that they reside in the United States. We pre-registered that we would exclude any participant that fails any of the three comprehension checks or the attention check. The final sample comprised 367 participants (49% men, 50% women, 1% non-binary, Mage = 39.6) [before exclusions, the sample comprised 500 participants (50% men, 49% women, 1% non-binary, Mage = 40.0)]. Three participants failed the simple attention check (select purple); eighty-six failed the first comprehension check (select every card); forty-six failed the second (select only the knife/elephant card); and seventeen failed the final comprehension check (who is shortest).

3. Results

a. Card Choice: Joint, Distributive, or Other

Following the pre-registration plan, multinomial logistic regressions were conducted to assess the main effects of Article and Content and the interaction of Question Type and Content on choice. None was significant, and as such (following the pre-registration plan), the final model was a multinomial logistic regression with Question Type as the predictor.[81] There was a significant effect of Question Type, $X^2(df = 6) = 242.69$, $p < .001$.

As expected, in the Neither Nor condition, participants strongly favored the distributive reading (98%) and in the Not All Three condition, participants strongly favored the joint reading (76%). In the Not Or condition, participants also strongly favored the distributive reading (100%). In the Not And condition, participants were divided between the joint

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[81] Specifically, following the pre-registration plan, a first multinomial logistic regression was conducted on choice, with Article, Content, Question Type, and Content * Question Type as predictors. There was no significant effect of Article, $p = .506$ (model AIC = 473.37). As such, Article was removed as a predictor and a second model with Content, Question Type, and Content * Question Type was conducted. There was no significant interaction of Content * Question Type, $p = .742$ (model AIC = 470.73). As such, Content * Question Type was removed as a predictor, and a third model with Content and Question Type was conducted. There was no significant effect of Content, $p = .875$ (model AIC = 462.24). As such, Content was removed as a predictor, and a final model with Question Type as predictor was conducted (model AIC = 458.51).

(50%) and distributive (38%) readings (12% selected another pattern). See Table 2 and Figure 6.

Type

Choice	Type	Prob.	SE	95% Confidence Interval	
				Lower	Upper
Other	Neither Nor	2%	0.02	0%	5%
Joint	Neither Nor	0%	0.00	0%	0%
Distributive	Neither Nor	98%	0.02	95%	100%
Other	Not Or	0%	0.00	0%	0%
Joint	Not Or	0%	0.00	0%	0%
Distributive	Not Or	100%	0.00	100%	100%
Other	Not And	12%	0.02	6%	17%
Joint	Not And	50%	0.04	42%	59%
Distributive	Not And	38%	0.04	30%	46%
Other	Not All Three	22%	0.05	10%	35%
Joint	Not All Three	76%	0.06	63%	89%
Distributive	Not All Three	2%	0.02	0%	6%

Table 2. Estimated Probability of Selecting Joint, Distributive, or Other patterns, by Question Type.
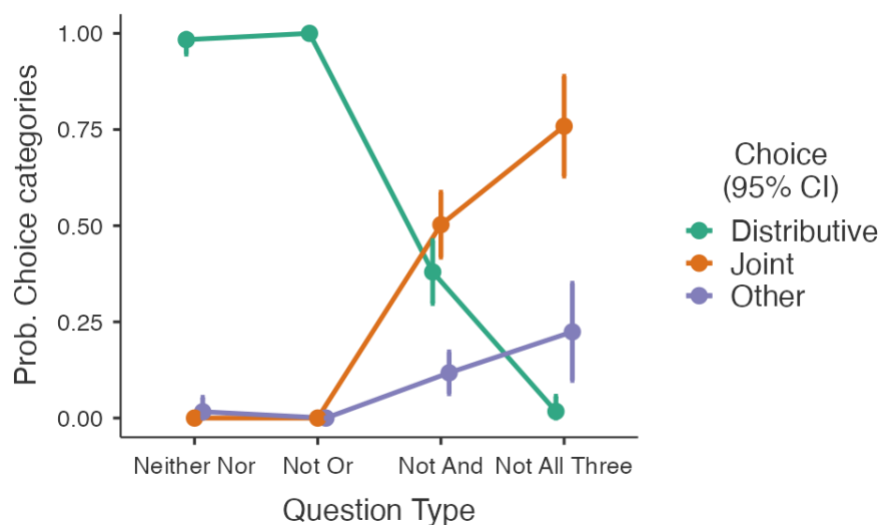

Figure 6. Estimated Probability of Selecting Joint, Distributive, or Other patterns, by Question Type.

To better understand what the "other" selecting participants expressed, we considered how many total cards they chose. Recall that the Distributive pattern requires choosing only one card (the card with only a turtle or only shoes) whereas the Joint pattern requires choosing thirteen cards (all except cat-dog-elephant-turtle and cat-dog-elephant; or all except fork-plate-knife-shoes and fork-plate-knife).

First consider the "other" selecting participants in the Not And condition. Fifty-four percent chose the same specific pattern of fourteen cards: all cards except the card with exactly the three listed items (the Joint pattern, plus the card with four items). This is consistent with participants understanding the sentence to mean "This card has <u>all three of</u> a card, dog, and elephant <u>and nothing more</u>." Thirty-two percent chose eleven, twelve, or thirteen cards, with no discernable pattern, and fourteen percent chose fewer than eleven cards, with no discernable pattern.

Next consider the "other" selecting participants in the Not All Three condition. Forty-six percent chose the same specific pattern of fourteen cards: all cards except the card with exactly the three listed items (the "all three and nothing more" pattern). Forty-six percent chose eleven, twelve, or thirteen cards, with no discernable pattern, and eight percent chose fewer than eleven cards, with no discernable pattern.

In the card selection task, the selection of the Joint pattern is more demanding, both in terms of identifying more cards to check and selecting more cards (with more clicks). While it is difficult to know what the "other"-selecting participants intended to express, it seems unlikely that many intended to express the Distributive pattern. It is more possible that some intended to express the Joint pattern (by selecting twelve or thirteen relevant cards but failing to notice one or two other relevant cards).

b. Reasonableness Ratings

After selecting their interpretive choice, participants evaluated the reasonableness of different interpretations. For the Neither Nor (Distributive Control) Question, the distributive pattern was evaluated as much more reasonable than the joint pattern, $t(60) = -20.08$, $p < .001$ (Mean difference = -5.13, 95% CI: [-5.64, -4.62]), and the arbitrary pattern, $t(60) = 21.08$, $p < .001$ (Mean difference = 5.18, 95% CI: [4.69, 5.67]). There was no significant difference between the joint and arbitrary patterns, $p = .704$.

For the Not All Three (Joint Control) Question, the joint pattern was evaluated as much more reasonable than the distributive pattern, $t(57) = 12.14$, $p < .001$ (Mean difference = 4.16, 95% CI: [3.47, 4.84]), and the arbitrary pattern, $t(57) = 17.05$, $p < .001$ (Mean difference = 4.40, 95% CI: [3.88, 4.91]). There was no significant difference between the joint and arbitrary patterns, $p = .287$.

For the Not Or Question, the distributive pattern was evaluated as much more reasonable than the joint pattern, $t(59) = -35.39$, $p < .001$ (Mean difference = -5.48, 95% CI: [-5.79, -5.17]), and the arbitrary pattern, $t(59) = 44.58$, $p < .001$ (Mean difference = 5.62, 95% CI: [5.36, 5.87]). There was no significant difference between the joint and arbitrary patterns, $p = .450$.

For the Not And Question, the distributive pattern was evaluated as much more reasonable than the arbitrary pattern, $t(186) = 16.00$, $p < .001$ (Mean difference = 2.96, 95% CI: [2.60, 3.33]), and the joint pattern was evaluated as much more reasonable than the arbitrary pattern, $t(186) = 15.47$, $p < .001$ (Mean difference = 3.35, 95% CI: [2.93,

3.78]). There was no significant difference between the joint and distributive patterns, $p =$ .203, although numerically the joint pattern had a higher mean (5.13 vs. 4.74) and median (7 vs. 5) than the distributive pattern.

Many "Not And" participants seemed to express recognition of ambiguity. In the Not And condition, 44% of participants simultaneously rated *both* the joint and distributive response patterns at or above the midpoint (4), indicating that they thought both were reasonable (28% rated only the joint pattern at or above the midpoint, 25% rated only the distributive pattern at or above the midpoint, and 3% rated both below. The median Joint rating was 7; the median distributive rating was 5). See Figure 7a.

By comparison, consider the Not Or condition. There, only 7% of participants rated both interpretations at or above the midpoint (93% rated only the distributive above the midpoint). See Figure 7b.
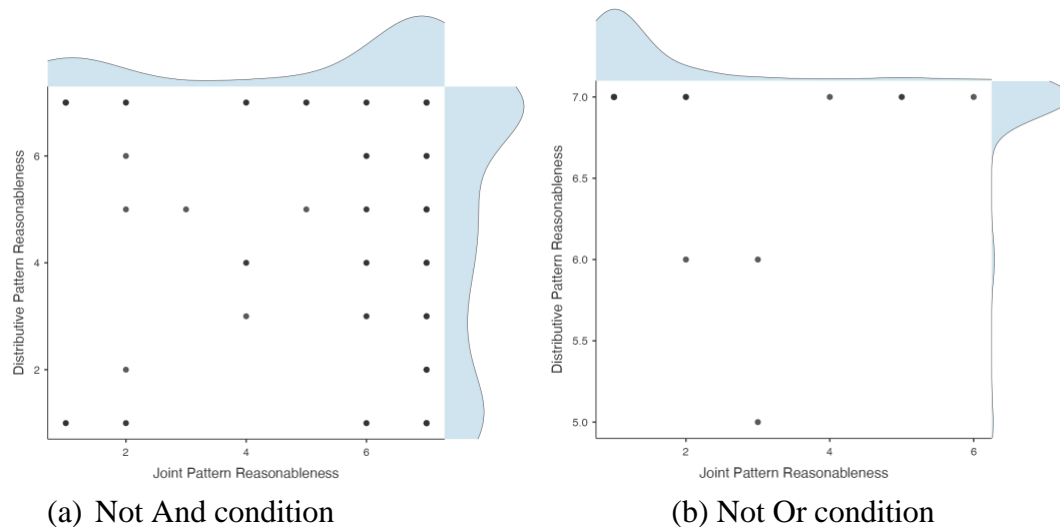

(a) Not And condition   (b) Not Or condition

Figure 7. Scatterplot of participants' ratings of the reasonableness of the joint and distributive patterns, by question type. In the Not And condition (a), many participants evaluated *both* patterns as reasonable; in the Not Or condition (b), the vast majority evaluated only the distributive pattern as reasonable.

4. Discussion

a. Testing Three Item Lists, Diverse Content Types, and Articles

This experimental study builds on prior work in theoretical and experimental linguistics, some of which has focused on negated conjunctions with two items ("does not have a cat and dog"). The current study examined three-item lists. It also used an experimental paradigm to test the significance of content type and additional articles.

The two content types used are diverse: one involves natural kinds (animals), the other artifact kinds (cutlery). Moreover, the cutlery examples may seem to form a more intuitive set (fork, plate, knife) that has a joint significance (affording eating), while the diverse animal items (cat, dog, elephant) do not as intuitively have a strong joint significance. Despite these differences, the content type was not relevant in our study: Across both examples, participants' understanding was similar.

Moreover, the addition of articles did not affect interpretation. "Does not have a cat, dog, and elephant" and "Does not have a cat, a dog, and an elephant" were understood similarly.

b. Differences Between "Not Or" and "Not And"

The Question Type manipulation was significant. Participants understood "not or" identically to a distributive control condition ("neither nor"). "Does not have a cat, dog, or elephant" was understood equivalently to "Has neither a cat, nor a dog, nor an elephant." Thus, the results strongly support that "not or" expresses a distributive meaning.

On the other hand, many more participants gave "not and" a joint reading. "Not And" was not understood identically to the distributive control condition. In the Not And condition, 38% offered the distributive interpretation, compared to 98% in the distributive control (neither nor). The "Not And" was also not understood identically to a joint control condition. In the Not And condition, 50% offered the joint interpretation, compared to 76% in the joint control (not all three). This comparison indicates that the "Not And" pattern was closer to the Not All Three pattern than the Neither Nor pattern.

c. Does "Not A, B, and C" Communicate a Joint, Distributive, or Ambiguous Meaning?

In sum, the results provide strong evidence of ambiguity: there are *two* competing interpretations. This does not mean that participants found "not A, B, and C" entirely unclear. Recall that there are over 30,000 possible card selection combinations, yet 88% of participants in the Not And conditions chose one of two highly specific patterns: The joint pattern (50%) and the distributive pattern (38%). This indicates that participants do not find the Not And Statements entirely unclear; rather, they seem divided between two specific meanings (joint, distributive).

The reasonableness evaluations further support ambiguity. For the Not And" question, a large proportion of participants rated *both* the joint and distributive readings as reasonable. If we divide response patterns into four types—(1) both interpretations are reasonable, (2) only the joint is reasonable, (3) only the distributive is reasonable, (4) neither is reasonable—the "both reasonable" (1) pattern was the most common response for the Not And Question. By contrast, for the Not Or Question, participants overwhelmingly favored the distributive response type (3).

The results do not strongly favor one of the joint or distributive interpretations over the other, but on balance they favor the joint interpretation. More participants chose that pattern in the card selection task (50% vs. 38%, however, this was not a statistically significant difference). And there is good reason to think that most of the 12% participants who chose "Other" expressed or leaned toward the joint pattern (most chose more than ten cards, which is closer to the thirteen-card joint pattern than the one-card distributive pattern).

IV. IMPLICATIONS

This Essay's demonstration of triangulation has practical implications for *Pulsifer v. United States* and theoretical implications for contemporary statutory interpretation theory.

A. IMPLICATIONS FOR *PULSIFER V. UNITED STATES*

As the Essay's introduction explained, the Supreme Court's analysis of *Pulsifer* is likely to turn on its linguistic analysis of the statute's ordinary meaning. This Part presents the implications for that analysis from our studies.

1. Can Negated Conjunctions Express Joint or Distributive Meanings?

Yes. Past work in theoretical linguistics has suggested this possibility,[82] as have intuitive examples in the lower courts. Our work supports this empirically,[83] with new corpus linguistic data analysis of a much larger set of naturally occurring language (in ordinary and legal corpora) and a new survey experiment with a large population. Negated conjunctions can take joint or distributive sense.

2. Do Negated Conjunctions Tend to Take a Joint or Distributive Meaning?

It was surprisingly difficult to quantify what proportion of naturally occurring negated conjunctions take joint or distributive meanings. The survey experiment indicates that people are torn between the two interpretations, with numerical proportions and reasonableness ratings numerically (but not significantly) higher for the joint interpretation. Importantly, however, the survey indicates that these two senses are the two most prevalent interpretations. Recall that survey participants were not informed of these two interpretations, but they chose the two highly specific patterns corresponding to joint or distributive meanings, out of over 30,000 possible patterns.

3. Which Text-Internal Indicators Clarify Joint or Distributive Meanings?

Given the potential ambiguity between a joint and distributive meaning, which text-internal indicators could help disambiguate? The data suggest that some features *are* indicators. Specifically, the corpus data shows that *both* indicates joint and *either* and *neither* indicate distributive. Notably, *both* typically modifies *and* and *either* typically modifies *or*. In *Pulsifer*, *both* is not available as a modifier (for a three-item list), and *either* is not used.

Our data also suggest that some plausible textual features are *not* indicators. For example, the corpus linguistic data suggests that the presence of an em-dash before the list does not necessarily imply a distributive reading. The survey experiment shows that, in three-item negated conjunctions, the presence of additional articles ("does not have an A, a B, and a C" vs. "does not have an A, B, C") does not increase understanding of a distributive meaning. Moreover, the survey indicates that at least one set of items with no special significance together (cat, dog, elephant) was no less likely to be understood as joint than one set of items with a special significance together (fork, plate, knife).

These findings count most strongly in favor of ambiguity. In other contexts, text-internal features indicate joint or distributive meanings. But not so in § 3553(f)(1).

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[82] Szabolcsi & Haddican, *supra* note 73, at 139.
[83] Jasbi et al., *supra* note 75.

4. How Do Speakers Express Joint or Distributive Senses?

A final analysis considers the linguistic question from a different direction. Most of our analyses start with the text ("Does not have A, B, and C") and ask what that text means. But we can also consider the two available options (joint, distributive) and ask how those meanings would typically be expressed.

The corpus linguistic and survey methods support that there are common and clear ways to express a "distributive meaning." For example: A defendant is eligible if he "does not have A, B, *or* C"; and A defendant is eligible if he "has neither A, nor B, nor C." Section 3553(f)(1) does not employ this clear distributive language. Survey participants also overwhelmingly (95-100%) understand these to express distributive meanings. In fact, participants understood negated disjunctions ("does not have A, B, or C") *identically* to a phrase with strong text-internal indicators of a distributive meaning ("has neither A, nor B, nor C).

5. The Scope of Our Intervention: Text-Internal and Text-External Indicators

Our empirical study provides evidence about text-*internal* indicators of meaning. However, *external* indicators, such as a rule's broader social context or purpose, could also inform understanding of negated conjunctions. As a simple example, imagine that a doctor provides her patient with a written instruction:

"Do not take drugs and alcohol."

If this rule were presented in the context of a substance abuse counseling session, our extratextual knowledge about that session leads us to understand this text distributively: Don't take drugs; don't take alcohol. However, if this rule were presented in the context of a patient's annual physical, in which the doctor prescribed cholesterol-reducing medications, our extra-textual knowledge about that session encourages joint understanding.

Our study does not address such text-external indicators in *Pulsifer*. Text-external indicators are relevant in understanding a wide array of language, including some negated conjunctions. The "drugs and alcohol" example above, as well as "don't drink and drive" and "don't drink and smoke" are good examples. However, there are not always decisive text-external indicators, and it is not clear *which* (if any) text-external indicators would be relevant to § 3553(f)(1). Moreover, it is unclear which sources legal interpreters should use to find those indicators and whether those sources would be consistent with modern textualism. Do relevant text-external indicators come from legislative history or the ordinary reader's understanding of the statute's purpose or policy aims? If the latter, does the ordinary reader understand § 3553(f)(1)'s policy aim to be more or less favorable to criminal defendants seeking safety valve relief? These are difficult questions, which we do not seek to address here.

Nevertheless, the possible influence of text-external indicators represents a possible limit on our study: strong text-external indicators could count in favor of either the joint, distributive, or ambiguity conclusion. Our Essay focuses entirely on text-internal indicators of meaning.

6. The Bottom Line: Ambiguity or Clarity?

Whether the right interpretive conclusion about § 3553(f)(1) is "ambiguity" or "clarity" depends heavily on where interpreters draw the ambiguity–clarity line. For example, Justice Kavanaugh has noted that some Justices appeal to a "65-35" rule; others a "90-10" rule.[84] For a judge inclined toward a 90-10 rule, it seems reasonable to interpret the data as supporting ambiguity in *Pulsifer.*

For a judge who more regularly finds clarity (for example a 55-45 rule), the weight of evidence leans toward the joint over the distributive reading, but *Pulsifer* presents a difficult call between ambiguity and the joint reading. In this instance, those conclusions about meaning may well lead to the same result, as for some judges ambiguity would trigger lenity (pro-defendant). It seems much more difficult to square the data with a conclusion that the statute clearly expresses a distributive sense.

Ultimately, our recommendations center more directly on the Court's reasoning, not the particular result it reaches. Our view is that textualists who seek "ordinary meaning" in this case should not rely heavily on dueling intuitive examples (such as "drink and drive" or "drink and smoke") which are easily cherry-picked and whose degree of similarity to the statutory text is unclear. Moreover, in this case, dictionary definitions and linguistic canons are not particularly helpful. If the Court's goal is to interpret language as it would be understood by an ordinary reader or speaker, the empirical data here about naturally occurring language and ordinary judgments seems at least as relevant as these other traditional tools.

These new tools are not a magic bullet. In some cases, the methods could point strongly in different directions; and we do not entirely agree among ourselves about which method to prioritize.[85] However, that is not the case here. As we have said, *Pulsifer* is no easy case. Nevertheless, the data tell a consistent story about this statute's complex structure, suggesting a triangulation of ordinary meaning that should inform the linguistic analysis of *Pulsifer*.

B. IMPLICATIONS FOR THEORIES OF INTERPRETATION

This Essay's case study also carries broader theoretical implications. For one, it is a proof of concept in the convergence of corpus linguistic and survey approaches to legal interpretation. In the past, this Essay's authors have disagreed with each other about the general and relative merits of the tools used here.[86] And some disagreement persists about how and when courts should use corpus linguistics and surveys. Nevertheless, this Essay represents an effort to cautiously apply both tools to a specific legal interpretive issue, in a

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[84] Brett M. Kavanaugh, *Fixing Statutory Interpretation*, 129 HARV. L. REV. 2118, 2137 (2016) (reviewing ROBERT A. KATZMANN, JUDGING STATUTES (2014)).

[85] *Compare* Tobia, *supra* note 10, at 753 (using survey results to challenge inferences from corpus linguistics), *with* Lee & Mouritsen, *supra* note 52, at 329–30 (identifying strengths of corpus tools and limitations of survey methods and asserting that "there are reasons to prefer corpus evidence in some contexts"), *and* Lee & Mouritsen, *supra* note 52, at 357 ("[F]ind[ing] room for optimism about refinements that could be made to survey methods that could help address the problems that we have identified.").

[86] On critiques of corpus linguistics see Tobia, *supra* note 10, at 747–52. On critiques of surveys, see Lee & Mouritsen, *supra* note 52, at 311–40.

collaboration between advocates and critics. In the future, others might well identify limitations of our approach or supplement it with additional methodological advances. But we think that this proof of concept represents significant progress in adjudicating between competing corpus linguistic and survey approaches to empirical interpretation.

Moreover, this Essay is a proof of concept in "triangulating ordinary meaning." Recall that the majority of today's Court claims to share a unified theory of statutory interpretation: textualism. Commentators have questioned the extent of this theoretical uniformity.[87] This Essay serves as a theoretical proof of concept that could help textualists begin to address those challenges. In at least some cases, empirical methods can supplement traditional tools to help triangulate ordinary meaning.

At the same time, the Essay's project highlights new and important questions. The possibility of useful triangulation raises further questions about imperfect triangulation. How should an interpreter weigh competing evidence of ordinary meaning, and how should an interpreter use these different tools in the most complementary way?

Consider, as a first example, the question of time and *original* meaning. *Pulsifer* concerns a contemporary statute, so when investigating the "original public meaning" of that statute's language, contemporary surveys are straightforwardly relevant. The possibility of substantial linguistic drift between 2018 and 2023 is small. But when investigating meaning at a time much further in the past, linguistic change could be greater. Because we cannot survey people in the past, but we can study historical texts, corpus linguistics is more beneficial for addressing linguistic drift.

As a second example, consider *context*. One question we asked of *Pulsifer* is whether prior findings about how people understand negated two-item conjunctions carry to people's understanding of three-item negated conjunctions. The survey method can help address such precise questions because the material is *designed* by the experimenter.

At the same time, we are cautious about including certain detail in a survey. One could poll participants who have the full statute, asking "does this mean that a criminal defendant with only B is eligible?" But laypeople likely hold policy views about criminal law and punishment, and psychological work shows that politics affects laypeople's judgments about statutory interpretation.[88] A participant who says "yes" to this question could be reporting their linguistic understanding—or simply that, as policy matter, they favor lenity toward criminal defendants. Our approach here eliminated any such effect of legal policy views, by removing the political–legal content of the scenario. This approach has a cost: the scenarios are not identical to the statutory text. But we think the benefit is significantly larger: these surveys reflect people's understanding of language, absent contamination from politically motivated reasoning.

As a final example, consider the ecological validity versus experimental control trade-off. Corpus linguistics can examine *naturally occurring* language, rather than language that appears in an artificial survey experiment.[89] Conversely, survey experiments can present participants with clean, carefully matched examples. Is people's understanding of negated conjunctions driven by something unique about the animal example used in prior work?

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[87] Nourse, *supra* note 1, at 38.

[88] Dan M. Kahan, David Hoffman, Danieli Evans, Neal Devins, Eugene Lucci & Katherine Cheng, *"Ideology" or "Situation Sense"? An Experimental Investigation of Motivated Reasoning and Professional Judgment*, 164 U. PA. L. REV. 349, 350 (2016).

[89] Lee & Mouritsen, *supra* note 52, at 311–40 (raising concerns whether surveys produce reliable evidence of the ordinary use of language).

The similar results for our closely-matched but different items (animals, cutlery) suggests *no*. Does the presence of additional articles ("does not have a cat, *a* dog, and *an* elephant") more strongly indicate a joint or distributive sense? Our experiment also suggests no. Using these methods together helps us study both language in the real but messy world and language in the context of an artificial but carefully controlled study.

CONCLUSION

This Essay offers two contributions: one practical, one theoretical. The practical contribution is new evidence that we take to be highly relevant to *Pulsifer*, a statutory interpretation case that the Supreme Court will soon decide, which could impact thousands of criminal sentences.[90]

The theoretical contribution builds on Larry Solum's call for triangulation among methods in constitutional interpretation.[91] Using *Pulsifer* as a proof of concept, we demonstrate what successful triangulation about a hard case of *statutory* interpretation could look like. The demonstration shows the differences and complementarities of corpus linguistics and survey methods and their ability to make interpretation more robust, reliable, verifiable, transparent, and objective.

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[90] *See* NAT'L CRIM. JUST. ASS'N, *supra* note 19 (referencing Professor Douglas Berman).

[91] Solum, *supra* note 8.